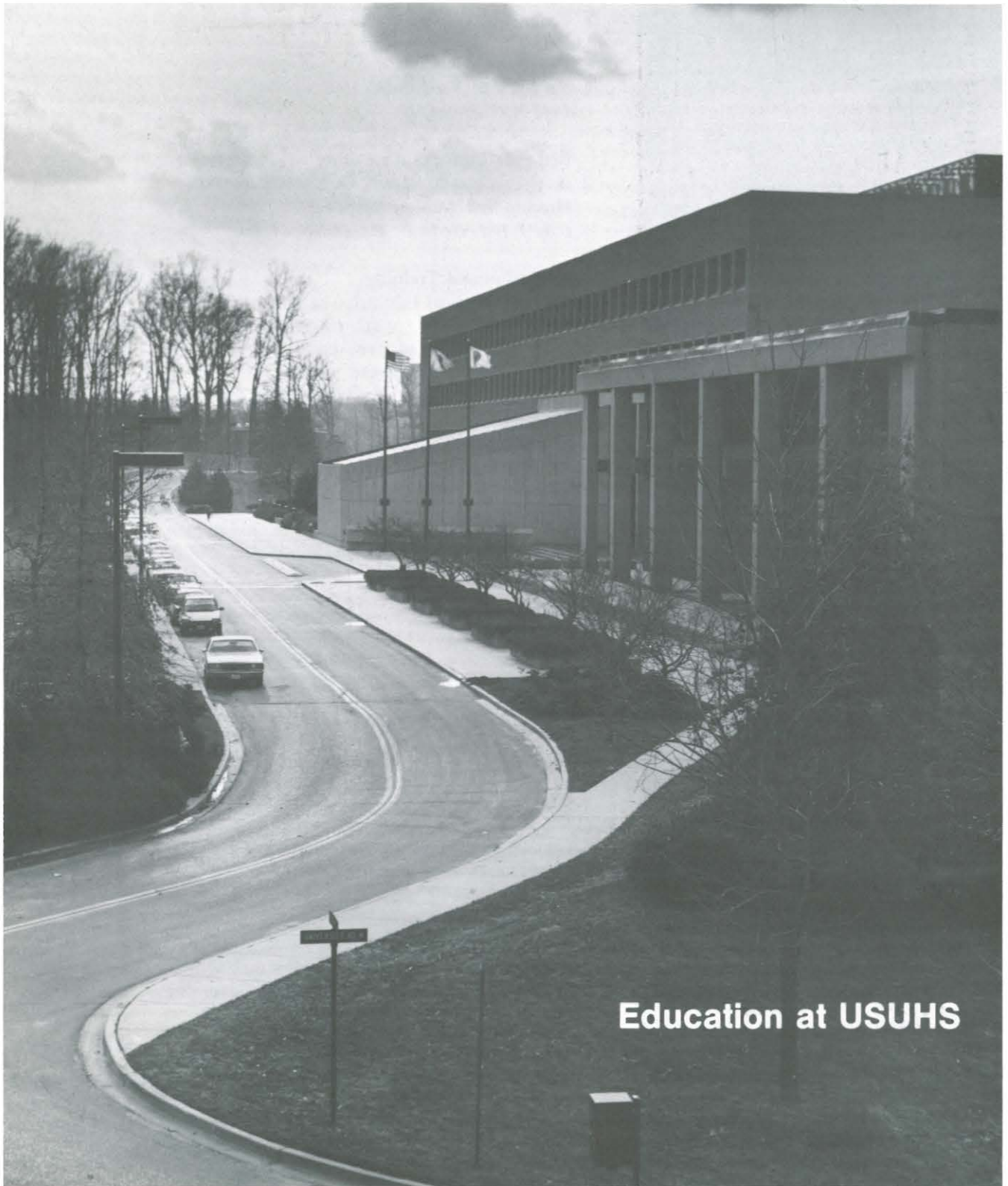


U.S. NAVY MEDICINE

March-April 1986



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COVER: As the Nation's only Federal medical school, the Uniformed Services University of the Health Sciences in Bethesda, MD, is hard at work training physicians for the Armed Forces. A profile of the university appears on page 7. Photo by HM2 Ernest W. Redding, NSHS, Bethesda, MD.

No Need to Turn Back

For a seriously wounded marine in the field or a critically injured sailor on a ship, life or death may be decided in moments. The ship or unit may have to turn back to get him medical help, and it may still take several hours, or even days, to get him to a surgeon. A man that might have only minutes to live may not make it.

But for some, a team of surgeons, operating room technicians, and nurses are right on the spot. One such surgical team is from Naval Hospital, San Diego, currently deployed aboard the Seventh Fleet amphibious assault ship USS *Okinawa* (LPH-3).

"We bring surgical expertise not only to the amphibious ready group, but we can also deploy to the field with the Marines," said CDR Lawrence Stirk, head of the surgical team. "I'm a nurse anesthetist; we have operating facilities, technicians, surgeons, and other highly trained professionals," he said. "This team is invaluable to a man miles away from shore needing major surgery."

At sea, the surgical team does routine operations as well as emergency care. A normal week might bring anything from a simple abscess to an appendectomy. But it's been the real emergency cases that make the men of the surgical team worth their weight in gold.

"There have been several times during this deployment that men have needed emergency surgery," pointed out LCDR John Greif, a surgeon from Poway, CA. "The surgical team saved the amphibious group valuable time by not having to detour or medically evacuate a man to a hospital ashore," he went on.

Operating in a compartment on an amphibious assault ship is much different than in a hospital setting ashore. On shore, a doctor has the resources of an entire medical facility; on board a

ship at sea, there is limited space and equipment. But through thorough planning a surgeon can deal with those conditions.

"It's a challenge," said Greif. "Some situations have come up where we have had to improvise to get the job done. One time, one of our tools broke during an operation. Instead of using the procedure done with the tool, we used an alternate method," he said. "We don't have all the resources here, but we manage very well."

"Working on a surgical team is a very special opportunity for a hospital corpsman," said HM3 Steve Jones. "Back at the hospital, I'm only an operating room technician. Here, I can also work with the ship's corpsmen in other fields of medicine. It makes me a better corpsman."

The pace in the operating room is fast and can look complex and unorganized to an informal observer. But each move has a purpose; each man a job; nothing is left to chance. The sur-

gical team in an operation runs like a finely tuned machine, each man a well-oiled gear, pushing the machine forward to get the job done.

The machine works, and works well. "After the operation, I sometimes get nervous," said Jones. "In a chest operation, the surgeon and corpsman could be elbow deep in the man's chest. I don't think about it while it's going on, but after the operation, sometimes I have to sit down to get hold of myself. There's never a dull second in the operating room. It is a very exciting job."

Because of the efforts of the men on such surgical teams, many hours or even days are saved by the task force. And a critically injured man has a fighting chance, within moments of medical help instead of hours or days. As one surgical team member put it, "There's no need to turn back." □

—Story and photos by PH2 Alexander C. Hicks, Jr., Seventh Fleet Public Affairs Representative, Subic Bay, R.P.



The surgeon's well-trained hands are assisted by an operating room technician.

Brief Psychiatric Family Consultations With Hospitalized Adolescents

CAPT Ralph J. Gemelli, MC, USN

The Navy psychiatrist is often asked to assist in evaluating the symptoms of emotional distress and/or in establishing a differential diagnosis in adolescents hospitalized on medical, surgical, or pediatric clinical services. It is accepted that hospitalized adolescents with pre-existing major psychiatric illness usually require a great deal of consultative services. The focus of this paper will be on the valuable contribution that can be made by the psychiatrist in providing brief and active consultations with less major and covert symptoms of emotional distress. This article presents an active developmental-conflict oriented approach that makes good use of the psychiatrist's time, and highlights both the clinical findings and family's emotional strengths in a concise and focused manner.

Three Criteria

I. Normal Adolescent Developmental Wishes. In the initial evaluation of hospitalized adolescents, the emphasis is both on normal development as well as adolescent psychopathology. The manner in which the psychiatrist raises developmental issues with the adolescent becomes the

first axiom of this approach (Table 1). Instead of asking the adolescent and parents to describe the patient's past history and current life, the psychiatrist assesses development by making a declarative statement in which he describes a normal developmental wish of adolescence. He then conveys an expectation to the adolescent and the parents. They should be able to say something about this developmental wish if they focus their thinking upon it (see Clinical Vignette 1).

The psychiatrist suggests that the adolescent and parents are supposed to be interested in addressing the teenager's normal development. Are there people and situations that may be interfering with this development? Was the adolescent avoiding a normal developmental wish himself? Hence, when the psychiatrist broaches normal developmental wishes in his questions to adolescent and parents, he actively "primes the pump." The adolescent and parents are stimulated into thinking about development. Consequently, the psychiatrist *teaches* about normal development and *investigates* with the adolescent and the parents the adolescent's progress toward achieving or avoiding normal developmental wishes. In short, *normal developmental knowledge communicated to the family produces specific developmental data.*

Obviously, in order to direct the family's attention to adolescent developmental wishes, the psychiatrist must

be familiar with the basics of overall normal development, particularly as it relates to the adolescent. Many theories exist and, while all developmentalists attempt to have their particular theory encompass all of development, no one theory achieves this goal.⁽⁵⁾

Some theories fit normal life data better for one developmental stage than do others.⁽¹⁾ In clinical practice, however, the psychiatrist gradually assimilates a workable theoretical orientation soundly based on clinical observation of normal children and adolescents. As a developmentalist, I have found the following list of normal adolescent wishes (Table 2) clinically useful.⁽²⁾ Presenting four wishes in a tabular schema, however, suggests that they are independent of one another. On the contrary, all these wishes are related and interdependent.

Clinical Vignette 1. *A psychiatric consultation was requested on a 14-year-old boy who presented with mild depression while being evaluated on the pediatric service for several months of fatigue, repeated episodes of pharyngitis, and episodic abdominal pain. An extensive medical work-up revealed no overt organic illness. In an initial family interview the teenager reported that he liked his new school, was interested in his school subjects, and other than periodically becoming "a little down," nothing was really worrisome to him. His parents reported that his academic performance had*

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been steadily decreasing over the last 6 months, and they were perplexed.

During the first 20 minutes of the first family interview, I considered the normal adolescent developmental wish gradually to achieve emancipation and independence from the parents. This wish is fostered through interaction with a peer group through which the adolescent can demonstrate his newly developing emancipated identity.

Subsequently, I asked the teenager in this family session, "Tell me how you have been dealing with your normal teenage wish to become involved with a group of friends that you can share problems and relate with?" Note that the question includes a declarative statement about normality; there is an expectant orientation in the wording, and an idea is communicated to the teenager that I assume he is interested in talking about this specific normal developmental wish. Not surprisingly, he was interested in my question and commented, "I guess I do need at least one friend to tell problems to, I haven't made one yet. I guess I'm still missing my best friend from California. I tell myself I don't want a new friend, but I can't tell a lot of my teenage stuff to my parents."

This statement became the opening, as it were, to explain the boy's sadness about losing his first close friend, a loss triggered by the family move. The sadness was not being verbalized and had led to an inner depressed state manifested through a psychosomatic expression (fatigue, abdominal pain, etc.).

One final point addresses how to approach a negative answer to a stated developmental wish. If this teenager had answered my developmental wish statement and question in the negative, such as, "I don't need friends to share problems with," I then would have told him and his parents that the absence of such a wish would be a

cause of concern because close involvement with a peer group is crucial to emotional, social, and psychological growth. Subsequently, I would request the family to address the absence of this normal adolescent wish.

II. Developmental Wishes Interfered With Externally or Avoided Internally Produce Conflict Within the Adolescent. In the second axiom, the psychiatrist tells the adolescent and the parents that when a teenager's developmental wish is not being expressed; either the teenager's development is being obstructed or external forces are interfering with it. Internal forces may also be responsible for obstructing development. These may be manifested by the avoidance of behaviors that would enable him or her to express the developmental wish.

External forces lead to the teenager experiencing an *external conflict*, while internal forces lead to the development of an *internal conflict*. Sources of external conflict are the parents, other authority figures in a teenager's life, and the current peer group. The source of internal conflict is the adolescent's superego (conscience) that threatens him or her with disapproval and guilt when trying to achieve the normal developmental wish specific for his or her current age. To clarify the adolescent's external or internal conflict, the psychiatrist produces a "psychologic X-ray." He then invites the teenager and the parents to discuss why and how such an "X-ray" may have arisen.

III. Nonverbalized Conflict Leads to Stress and Reactive Feelings Followed by Nonadaptive Modes of Expression. The third axiom involves communicating to the adolescent and parents that a teenager in conflict about expressing a developmental wish becomes "stuck." A way to

become "unstuck" involves being able to talk with parents about conflicts. When, however, a conflict goes unrecognized or unacknowledged by the adolescent or the parents, it may never be discussed within the family. Consequently, unrecognized conflict leads to the "stuck" situation, which eventually produces stress and frustration. Stress and frustration quickly produce reactive feelings, most often sadness or anger, or a combination of both.

One way of teaching the family how teenagers deal with reactive feelings is by using the interactional cycle schematically shown in Table 3. In a modification of the cycle described by Long,⁽⁴⁾ the response to reactive feelings are viewed in four ways. The *first* is through verbal expression. This is usually the most adaptive way of dealing with feelings because verbalization to parents invites a discussion of the cause of the feelings. This then uncovers the antecedent stress and frustration. In most reasonably healthy families the cause for the developmental conflict is revealed and eventually removed.

The *second* mode of expression is a process in which psychological defense mechanisms are responsible for containing the reactive feelings within the mind. Defense mechanisms are adaptive when they are used for a brief time, and are relinquished when it is appropriate for the teenager to discuss the feelings with the parents. Defense mechanisms are maladaptive when they become fixed and chronic, and hence are not given up even when the teenager and parents have time to talk and listen. Defense mechanisms used chronically do not lead to behaviors that foster developmental wishes. They often lead to withdrawal and a deterioration of age-adequate assertiveness, e.g., a deterioration in learning motivation in school.

The *third* mode of expression of reactive feelings is the process in which

TABLE 1
An Active Developmental-Conflict Oriented Approach
Three Axioms in the Adolescent Evaluation

1. State a developmental wish declaratively with an expectation that the family will be interested in discussing whether this wish is being achieved.
2. State how a developmental wish being interfered with externally or avoided internally produces conflict within the adolescent.
3. Describe how nonverbalized conflict leads to stress and reactive feelings which can lead to nonadaptive modes of expression.

TABLE 2
Normal Adolescent Developmental Wishes
Overall Developmental Wish: Establish an Emancipated Identity

- *Establish Independence From Parents:* Fueled through expressing individual thoughts and emancipated behaviors to parents and a supportive peer group.
- *Establish a Realistic Self-Image Through Relinquishing Wishes for Self and Parental Perfection:* Fueled through de-idealizing of parents and performing and competing in the world of peers.
- *Establish a Gender Appropriate Sexual Identity:* Fueled through demonstrating sex role behaviors in conjunction with parental guidance and approval.
- *Establish a Cognitive Appreciation of How One's Past Influences Present and Future Behaviors:* Fueled through parental encouragement to discuss the successes and failures in the parents' life histories.

they are contained within the body. This addresses the brain phenomenon by which feelings are expressed through a specific and vulnerable body part or physiological system. In this model of brain functioning, reactive feelings, not expressed verbally, produce a state of central nervous system disequilibrium that can trigger dysfunction in a vulnerable body part or

physiologic system.⁽³⁾ This psychosomatic expression can be adaptive if used transiently. More often it becomes a chronic maladaptive mechanism that enables the adolescent and parents to avoid acknowledging the presence of reactive feelings arising from conflict.

The *fourth* mode of expression of reactive feelings, usually the most

maladaptive, is the transformation of feelings into action without any intervening thinking. Hence, the actions almost always produce trouble with parents and others and lead to negative feedback. A self-generating cycle of stress ensues leading to negative feedback, which produces more stress. The parents in this situation may report periodic running away, reckless driving, or hitting other teenagers, etc.

Clinic Vignette 2. *Mary was a 15-year-old girl hospitalized for 2 months, having twice undergone major abdominal surgery in an attempt to arrest the spread of a very malignant undifferentiated tumor. There were new metastases found, and the Surgery Department was hesitant to operate again. Mary came from an intact family with two older brothers, a younger sister, and an active duty career line officer father. She was an honor student, a gifted gymnast and swimmer, and was a part-time fashion model. In the hospital, she most often visited with the mother, as her father exerted considerable time and energy managing the household. Both Mary and the parents knew about the new metastatic spread and the ongoing discussions within the Surgery Department about whether to operate again. After her second surgery, Mary became very belligerent and demanding with hospital staff, while rejecting their willingness to give her assistance. She did allow hospital staff to give her the basic care she needed, but no more.*

A consult was sent to psychiatry. In an initial interview, Mary was quite verbally hostile to me, while complaining incessantly about the hospital food, her room being less than "perfectly clean," etc. She denied being sad or depressed, stating only that if the hospital treated her better, she would feel better.

In this particularly tragic situation, the psychiatrist had to assess how this teenager was dealing with the obvious loss of her health and perhaps her life. However, despite the overwhelming issue of major illness, the psychiatrist must focus on what developmental

An important developmental wish in adolescence (Table 2) is eventually to establish a self-image that is guided by both realistic goals and appraisals of one's capacities and limitations. In attaining a realistic self-image, adolescents gradually relinquish their wishes to be perfect themselves and/or have perfect parents. This assists their capacity to accept limitations and failures.

In my second individual interview with Mary, I told her that she was sad and was avoiding thinking about her sadness by looking for reasons to argue with everyone around her. Additionally, I told her she was afraid that if she talked about being sad with her family and others that she might be rejected (an external conflict), or that she might be told by her conscience that she was not supposed to be sad (an internal conflict). She responded to this intervention by yelling, "Shut up! I don't want to listen to that." I then told her, "You keep trying to get everyone to argue and be upset with you, me included, because someone outside or inside of you is telling you that you can't talk about being sad." She then looked as if she would yell again, but remained silent for a moment and then stated, "People feel hurt when you cry." She showed momentary sadness then quite abruptly began again to complain.

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graph TD; A[A. Stress] --> B[B. Frustration]; A --> F[F. Negative Feedback]; B --> C[C. Reactive Feelings]; C --> D[D. Action]; C --> VE[Verbally Expressed]; C --> Body[Contained within Body: Psychosomatic symptoms and/or stress-related diseases]; C --> Mind[Contained within Mind: Psychological defense mechanisms]; D --> E[E. Environmental Reactions]; E --> F; Body --> Adaptive[Adaptive when transient and selective to audience]; Mind --> Adaptive; Mind --> Maladaptive[Maladaptive when fixed, and nonselective to audience];
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much of her own anger in response to this calamity. At the same time, she was oblivious to Mary's periodic signs of sadness because of her own tendency to avoid expressing sadness.

In utilizing axiom one (Table 1), I asked Mary's parents, "How have you reacted to Mary's normal need to talk about the sadness she feels when she accepts the recent loss of so many of

the things she values, and gives up blaming herself or someone for her illness?" Both parents, at first, seemed quite perplexed and then stated that they suddenly realized an absence of sadness both in Mary and in themselves. They offered no thoughts when I asked them why sadness was not something being expressed in their family.

Utilizing axiom two and focusing on the normal adolescent wish eventually to accept normal imperfections in themselves and others, I pointed out an internal conflict in Mary, "Mary is in conflict within herself between one side of her that tells her that no hospital or doctor is perfect, and that no one is at fault for her illness, and this side feels sad. At the same time, another side tells her that the hospital and staff should be perfect, and that this illness should never have happened to such a hard-working girl." Both parents responded to this intervention with intense interest. At this point, I told the mother, "Perhaps you are feeling that someone has to take responsibility for Mary's severe illness. You want to be angry at someone; you feel someone has to take the blame, but who do you blame? In looking for blame, you are losing a chance to encourage Mary to tell you about her sadness, and for you to tell Mary about your sadness." The mother looked confused, then sad.

Axiom three was now addressed. It focused on the manner in which Mary verbally avoided expressing her conflict, and the stress and reactive feelings it engendered. I told the parents, "The way Mary is dealing with this conflict between one side of her that wants to accept the illness and talk about her sadness, and another side that refuses to accept that she is suffering any losses, is to look for reasons to argue and fight with people. Arguing and complaining is a defense mechanism or shield. As long as she argues, she is alienating herself from the very people, like yourself and the staff, who might accept her sadness and allow her

to mourn the loss of her excellent health."

Following this intervention, the mother became quite pensive and began to sob quietly. The father, while putting his arm around his wife's shoulder, stated that he clearly understood how sad feelings were being avoided by allowing Mary to argue and complain. The mother commented how she now understood that it was much easier to sit with Mary while they both complained about the doctors and the nurses, then to deal with their painful, sad feelings. At the end of this session, I told the parents that they needed to address these issues with Mary, and that perhaps I didn't need to see Mary individually. They concurred and agreed to meet with me again in 3 days.

Indeed, family strengths were "released" as the family worked on the conflict that Mary was experiencing. Three days later, the mother and father reported the following interaction.

The mother had been alone with her daughter and when Mary began complaining about the hospital, the mother interrupted and told her that complaining was helping them both avoid talking about being sad. Mary began to cry and talked about how it was so easy to complain, but that lately she had "run out of people to be angry at." She also disclosed that while she wanted to keep seeing her mother, she missed her father and wanted him to visit her more often.

Over the next several days, the hospital staff reported that both mother and father were spending individual time with their daughter and, while being much sadder, Mary was also calmer. Staff members were able to relate to her in a more emotionally supportive manner. The critical and hostile girl was no longer interfering with her parents' and the staff's empathy for a girl with a tragic illness. The psychiatric consultation had involved a total of four individual and parent sessions.

Summary

The structured developmental-conflict oriented schema encourages the psychiatrist to search for and encourage the expression of the teenager's and parents' emotional strengths and healthy development. Hence, the consultation process becomes an interaction in which the psychiatrist, the teenager, and the parents *all* provide one another with important data. Once the psychiatrist "primes the pump" by producing statements as outlined in the described axioms (Table 1), thinking is stimulated in the teenager and the parents. As has often been my experience as a Navy adult and child psychiatrist, this structured approach engages and involves families in a manner that helps the teenager and parents to utilize the psychiatrist as a "codevelopmentalist." He can then assist the family to deal with the teenager's physical and emotional symptoms and show them how to support the teenager's developmental growth. An invaluable resource is often neglected when the psychiatrist or other medical personnel approach a family as "ill and in need of repair." The neglected resource is each family member's developmental wish to help one another adapt to the general stressors inherent in a family's growth process and to the unique stressors associated with being a military family.

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USUHS: Military Medical Education

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A military physician has the dual responsibilities of being an effective officer and a competent doctor. Both professions, military and medical, are widely acknowledged to be among the most demanding and exacting. The development of the necessary qualities represents a unique educational challenge. Young physicians entering military service are expected to learn both professions at the same time, all to often in an intensive on-the-job training program. The Department of Military Medicine at the Uniformed Services University of the Health Sciences (USUHS) is training a generation of military physicians to be equally at home in the field and the hospital.

Background

A military physician must learn at least two medical specialties: one in the traditional medical specialties for day-to-day practice, and the specialty of military medicine. The term "military medicine" is used freely but is not a well-defined specialty, lacking even a certifying board examination. How-

ever, most recognize that military medicine is different from the practice of medicine in the military. The former is unique while the latter may differ little from the clinic or hospital practice of our civilian counterparts.

Military medicine is practiced in a setting which has no civilian equivalent. Physicians assigned to shipboard, FMF, or MMART positions practice a vastly expanded form of occupational medicine. Intimate knowledge of the work environment from basic training to flightline, shipboard, sub, or with marines is required to recognize the hazards and stresses of the troops. The effective military physician has the capacity to move comfortably between a fixed and field medical installation and provide quality care in both.

While some of the essential topics needed by the military physician can be learned from books and classroom instruction, the most important learning requires experience as an officer, serving with and sharing the hardships of the people for whose care they are responsible.

A prerequisite of the military physician is a high degree of professional competence in the art of medicine. Built upon that competence, he or she must have additional skills in preventive medicine, emergency prehospital care, infectious disease, psychiatry,

and health care administration. There must be an implicit understanding that the Medical Department not only serves "the line" (combat arms), but also has a personal commitment to the line commander and the fulfillment of his mission. There must be a deep understanding of the total needs of the military community and an acute sense of the role of the physician as a support service.

That many military physicians have done well in the past is more a tribute to their talent and dedication than to formal training or education programs in military medicine. Better ways to educate medical officers have been explored by all the services on a sporadic basis; however, the question persists. How can military medical officers be trained for a "come as you are" war within the curriculum of a 4-year medical school? The F. Edward Hébert School of Medicine's Department of Military Medicine is attempting to answer that question.

Curriculum

USUHS officers receive about 640 hours in military medical studies beyond the standard curriculum. The continuum of training this department offers is designed to acquaint the medical officer with the people, programs, facilities, job, and work environment of the line in order to understand how

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the medical mission provides support.

Throughout medical school the additional skills acquired include: *First Year*: Field Medical Skills, Field Training, Squad Leader, Basic Life Support Certification. *Second Year*: Basic Life Support Recertification, Intermediate Cardiac Life Support. *Third Year*: Basic Life Support Recertification. *Fourth Year*: Advanced Field Training, Basic Life Support Recertification, Advanced Cardiac Life Support, Advanced Trauma Life Support, Company Command.

The education process begins before arrival at the USUHS campus in *Pre-Freshman Orientation*, where military organization, customs, and traditions are learned. For naval officers this is accomplished at the Officer Indoctrination Course at Newport, RI. This curriculum is picked up in the first year of medical studies, *Military Medicine I*, an 80-hour course, where officers learn those aspects of health care delivery, disease occurrence, and threat of injury unique to military operations. Subjects include military applied physiology where the concepts learned in medical physiology are applied to pertinent aspects of military operations (Table 1).

In the summer following the first year of medical school, officers apply their new knowledge in a week-long field exercise, similar to Field Medical Service training, and a 4-week assignment where they work with an operational flying, fleet, or Marine unit. They are also allowed to compete for the Army's Expert Field Medical Badge. The overall goal is for students to learn the essentials of being an officer and experience firsthand what their future patients do for a living. These experiences, *Military Medical Field Studies* (Table 2), provide the opportunity to practice what has been learned in a controlled and protected environment.

During their second year, the officers carry the knowledge gained over the summer into *Military Medicine II* (Table 3). The 40 hours of instruction insures they are familiar with peacetime and wartime military missions





Left: *Students learn to maintain an airway on a simulated burn patient . . .*



. . . protect themselves from chemical, biological, and chemical warfare and . . .



. . . perfect combat medical skills.

TABLE 1
Military Medicine I

Course Subjects		
Combat Injuries •Conventional •Psychiatric •Chemical •Nuclear	Medical Officer •Role in Peace/War •As an Officer and Leader •As a Staff Officer •In Support of Disaster	Physiological Response to Environmental Stress •Undersea •Ionizing Radiation •Biological Rhythms •Outerspace
Deployment Planning •Preparing Your Troops •Medical Intelligence	Geneva Convention/Law of War Occupational Medicine	•Spatial Disorientation/Motion Sickness •Thermal Stress •Shipboard
Echelons of Care Evacuation Policy	PHS and Coast Guard Support Fleet Marine Force	•Hypobaric

TABLE 2
Military Medical Field Studies (MMFS)

Course Subjects		
<i>Field Training</i>	<i>Specialty Training</i>	<i>Assignment/Activities</i>
Air Evacuation	Parachutist	Sea/Sub Duty
Beach Evacuation	Expert Field Medical Badge	Backseat Jet
Chemical Defense	SCUBA	Enlisted Relations
Fleet Marine Force	Search, Evasion, Resistance	Project Officer
Night Operations	Escape	Shadow Flight Surgeon
Resupply/Logistics	Water Survival	Fleet Marine Force
Tactical Demands		

TABLE 3
Military Medicine II

Course Subjects	
Air Evacuation on Land or Afloat	Medical Administration
Estimation of Casualties	•Legal Aspects
Medical Command	•NDMS
Organization of Field Medical Units	•Logistics
Sanitation/Occupational Health	•Committees
Inspections	•Quality Assurance
	•Credentials

and is directed toward understanding the administrative and support functions of a medical organization. They also receive Intermediate Cardiac Life Support training, a course developed by USUHS.

During the third year, no additional military medical instruction is provided. The officers have a standard medical school curriculum consisting of rotations through clinical clerkships of the major specialties.

In the fourth year, all officers complete *Military Contingency Medicine* (MCM), a 180-hour didactic course, and *Military Emergency Medicine* (MEM), a 4-week clinical rotation. These courses are designed to teach and develop those clinical skills most needed to practice medicine in austere, stressful conditions.

The learning objectives of MCM/MEM are reached in three phases: Three weeks of didactic lectures and laboratory exercises provide the basic background in addition to an opportunity for certification in Advanced Cardiac Life Support and Advanced Trauma Life Support (Table 4). Then

they participate in a 1-week field exercise "Operation Bushmaster." Officers are placed in a field medical unit in a simulated combat area where they are responsible for a support medical operation. Through a series of Operation Orders, they manage increasingly complex mass casualty scenarios. The treatment facility will be attacked, forced to move at night, function in a chemical environment, and provide care for multiple casualties, including traumatic and medical patients. The requirement to provide preventive medicine, sanitation, and humanitarian support to indigenous populations all complicate the operation.

After Operation Bushmaster rotations are scheduled at busy emergency rooms throughout CONUS. These are selected for the high quality educational experience available (Table 5). There they have the opportunity to practice the principles of patient management and decisionmaking learned in the classroom.

Results

The training offered by the Department of Military Medicine at USUHS is the initial step toward achieving a well-rounded military physician. Graduates have:

- An understanding of military organization and the day-to-day life of military personnel.
- The ability to function with a field line unit in both nonmedical and medical roles.
- A sense of belonging to the Medical Corps.
- Management and leadership skills.
- An understanding of the medical capabilities of their sister services' field medical units.

The curriculum continues to be refined as feedback is received from various training exercises or actual

TABLE 4 Military Contingency Medicine Subjects	
Course Subjects	
Advanced Cardiac Life Support	Field Training
Advanced Trauma Life Support	•Map and Compass
Basic Life Support	•NBC
Disaster Planning and Management	•Field Sanitation
Leadership	•Radio/Telephone
Mass Casualty Care	•Patient Evacuation
Medical, Surgical, and Dental Emergencies	•Law of War
Operational Medicine:	•Foot Care
Planning and Management	
Prehospital (Paramedic Skills)	

TABLE 5 Emergency Room Rotations	
<i>Hospital</i>	<i>Location</i>
Baltimore Trauma Center	Baltimore, MD
Ben Taub	Houston, TX
Charity	New Orleans, LA
Darnell AMC	FT Hood, TX
Greater Southeast Community	Washington, DC
Jackson Memorial Hospital	Miami, FL
Jersey City Medical Center	Jersey City, NJ
Suburban Hospital	Bethesda, MD
Thomason Hospital	El Paso, TX
University of Medicine and Dentistry of New Jersey	Newark, NJ
Washington Hospital Center	Washington, DC
Wilford Hall AFMC	Lackland AFB, TX

combat. The first class graduated in 1980 and the majority of graduates are in residency training. Some, however, have had operational responsibilities and have proved the value of the

investment in military education during their medical training. Only time will tell if these efforts are erasing names from some future war memorial. □

SPARTEN

A Total Body Fitness Program for Health and Physical Readiness

LT Edward J. Marcinik, MSC, USN

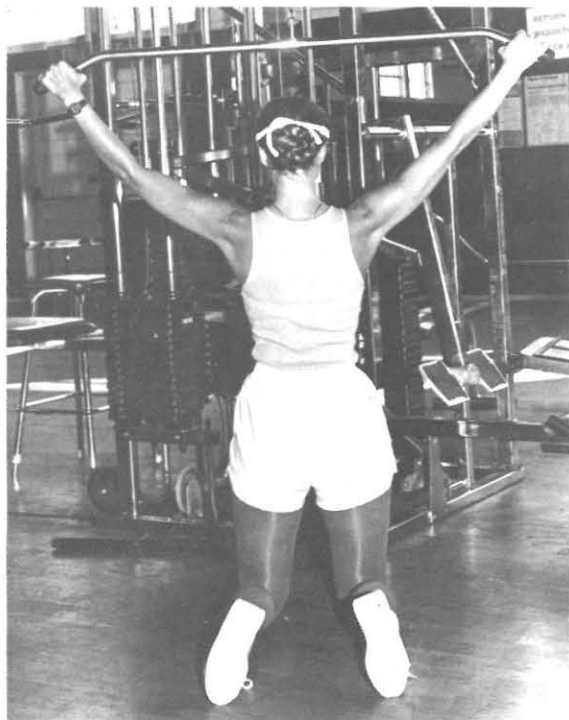
SPARTEN (Scientific Program of Aerobic and Resistance Training Exercise in the Navy) is a total body fitness program designed by exercise physiologists from the Naval Health Research Center, San Diego, CA.(1) The development of SPARTEN comes in response to a DOD directive ordering each military service to devise training that meets the specific physical requirements of their personnel.(2) The decision to establish job-relevant physical training programs is based on research conducted by the Navy Personnel Research and Development Center, San Diego. Their findings indicate that while general shipboard tasks oblige only moderate aerobic demands, these evolutions often require high levels of muscular strength to perform.(3)

Essentially, SPARTEN offers a balanced plan of aerobics for maintenance of health and progressive resistance training for optimal job performance (4) and prevention of job-related injuries.(5) Each exercise period involves a bout of circuit weight training (CWT) performed on a multi-station weight machine. The prescribed exercises are structured to

Multi-station weight machine



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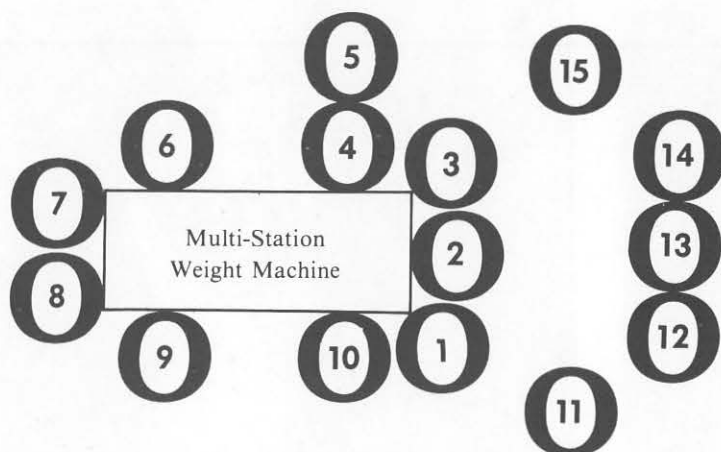
Navy women have found CWT to be especially helpful in improving arm strength and enhancing muscular tone.



TABLE 1
Fitness Changes Following A/CWT and CWT Programs

	<i>A/CWT</i> % Change		<i>CWT</i> % Change	
	Males	Females	Males	Females
<i>Upper Torso Dynamic Strength</i>				
Shoulder Press	+13.5	+28.0	+15.5	+15.6
Bench Press	+ 7.2	+ 9.6	+10.3	+13.9
Arm Curl	+13.5	+35.7	+13.0	+24.0
Lat-Pulldown	+15.3	+ 9.5	+15.5	+11.8
<i>Lower Torso Dynamic Strength</i>				
Leg Press	+19.8	+20.3	+10.7	+15.2
Knee Extension	+24.5	+23.4	+24.8	+30.4
<i>Muscular Endurance</i>				
Bench Press	+85.7	+57.2	+39.6	+65.7
Leg Press	+43.2	+47.3	+28.2	+44.4
<i>Stamina</i>				
Maximal Work Capacity on Bicycle Ergometer	+19.9	+15.5	+ 3.0	+ 2.3

Participants completed 2-3 circuits on a multi-station gym three times per week on alternate days. Subjects trained at 40-60 percent of determined one repetition maximum (1RM) strength following a cycle of 15 seconds of work at a station with 15 seconds to move to the next station.



Stations

- 1 Pull-up
- 2 Arm Curl
- 3 Lat-Pulldown
- 4 Leg Press
- 5 Arm Dip
- 6 Sit-up
- 7 Bench Press
- 8 Hip Flexor

Stations

- 9 Shoulder Press
- 10 Knee Extension
- 11 Push-up
- 12 Body Builder
- 13 Jumping Jack
- 14 Flutter Kick
- 15 Run-in-Place

Training Recommendations

- During each CWT session participants may begin at any of the 15 exercise stations. Participants should move sequentially from station-to-station, i.e., an individual starting at station 4 (leg press) should move to station 5 (arm dip) then station 6 (sit-up), etc.
- It is recommended that individuals exercise for 15 seconds at each station and be allowed 15 seconds to move to the next station and adjust weights. To facilitate this training format, it is suggested a supervisor blow a whistle at 15-second intervals during each workout.
- Depending upon available space and equipment, the recommended exercise stations listed above may be deleted and alternative exercises added.

Figure 1. CWT Layout

develop all the major muscle groups of the body and when performed in rapid succession promote improvement of the cardiorespiratory system. Many of these exercises also closely simulate the basic body efforts (i.e., lifting, pushing, pulling) commonly under-

taken during the performance of muscularly demanding shipboard work.

Research studies to date have showed aerobic/circuit weight training (A/CWT) methods to be superior to aerobic/calisthenic conditioning for total body fitness. SPARTEN

training has proven to be especially effective in enhancing the upper torso muscular strength of Navy men and women.(6,7)

Critical space, time restrictions, the limited opportunity for aerobic exercise, and the compactness of the exercise equipment appear to make this mode of conditioning highly applicable for shipboard use.(8) Because of its continuous nature, CWT can lead to modest development or at least maintenance of aerobic capacity.(9) Table 1 shows changes in fitness following participation in CWT and A/CWT programs.(6,7,9)

Program Outline

Warm-Up. A warm-up period consisting of stretching exercises is performed prior to each training session. These include stretches for hamstrings, buttocks, back, shoulders, arms, and arm circles. This set of exercises is designed to enhance range of movement about a joint and prevent muscle and joint injuries.

CWT. To develop muscular strength and endurance necessary to perform strength-demanding shipboard work, a program of CWT is recommended. During each session participants are required to perform calisthenics and strength enhancement exercises on a multi-station weight training device. Recommended exercises include: pull-up, arm curl, lat-pulldown, leg press, arm dip, sit-up, bench press, hip flexor, shoulder press, knee extension, push-up, body builder, jumping jack, flutter kick, and run-in-place (see Figure 1). During CWT individuals follow a standardized work/rest cycle, i.e., participants exercise for a defined period of time at each station (15 seconds) then after a short rest (15 seconds) proceed to the next station.

Running. If appropriate space is available, individuals participate in a continuous running program in order to provide a training stimulus of sufficient intensity for cardiorespiratory fitness and also to reduce body fat content. To determine proper running intensity, participants learn their heart

rate pulse. This enables individuals to calculate their personal training heart rate (Table 2).

Cool Down. Following the vigorous exercises, a brief walk/jog is performed to prevent pooling of blood and to promote circulation.

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TABLE 2
Running/CWT Schedule

Basic Conditioning Program				
Week	Exercise Mode	Frequency	Intensity	Duration
1-4	Run	3 Days/Week	70% of MHR*	1.0 Mile
	CWT	3 Days/Week	60% 1 RM**	2 Circuits 15 Sec/15 Sec Work/Rest Cycle
9-8	Run	3 Days/Week	70% of MHR	1.5 Miles
	CWT	3 Days/Week	60% 1 RM	2 Circuits 15 Sec/15 Sec Work/Rest Cycle
9-12	Run	3 Days/Week	70% of MHR	2.0 Miles
	CWT	3 Days/Week	60% 1 RM	15 Sec/15 Sec Work/Rest Cycle
Advanced Conditioning Program				
Week	Exercise Mode	Frequency	Intensity	Duration
13-16	Run	3 Days/Week	70% of MHR	2.5 Miles
	CWT	2 Days/Week	60% 1 RM	2 Circuits 30 Sec/15 Sec Work/Rest Cycle
17-20	Run	3 Days/Week	70% of MHR	3.0 Miles
	CWT	2 Days/Week	60% 1 RM	2 Circuits 30 Sec/15 Sec Work/Rest Cycle
21-24	Run	3 Days/Week	70% of MHR	3.0 Miles
	CWT	2 Days/Week	60% 1 RM	3 Circuits 30 Sec/15 Sec Work/Rest Cycle

- It is recommended that CWT exercises be performed prior to running exercises on alternate days of the week during the basic conditioning program.
- During the advanced conditioning program, it is recommended running exercises be performed on separate days from CWT.

*Maximum Heart Rate
**1 Repetition Maximum

Effective Counseling

CAPT Richard A. Morin, MSC, USN

Counseling is a fundamental act of leadership. Naval officers are taught and trained in methods and theories of leadership, communication, and a variety of subjects, including counseling. Counseling according to Webster, is giving "direction, instruction, or to guide a plan of action," and as "a practice or service designed to guide an individual to a better understanding of his problems and potential. . . ."(1) One authority describes counseling as "face to face conversation that motivates"; the purpose of which is to "discover insights and to become involved using nondirective listening techniques."(2) A text on *Naval Leadership* advises: "No more effective leadership technique exists for maintaining personal contact and giving recognition."(3)

Although the need for counseling skills is obvious, advice on the purpose of counseling and how to achieve effective counseling is less than clear. Read, for example, the following advice: "the too-formal manner . . . can destroy the counseling technique before it has begun."(4) "In his role of counselor, the officer should give serious attention to the problem and then follow with straightforward advice or decision depending on the nature of the case."(5) "Counseling is advising an individual . . . to help him understand his problem so that he may carry out a plan for its solution."(6) "When counseling, moralizing on the weakness of human nature or using such frontal approaches is shunned."(7) A text entitled *Face to Face Con-*

versations That Motivate People argues that the *only* purpose of counseling is to discover insights using nondirective listening methods.(8)

Naval officers *must counsel subordinates*. The instruction for preparing Navy fitness reports states: "Reporting seniors . . . should . . . establish with each and every subordinate mutually understood, finite objectives for which the subordinates will be held accountable accompanied by personal counseling A frank and meaningful discussion and explanation of the report must be conducted with the purpose of each officer achieving full understanding of performance."(9)

The Navy instruction for preparing enlisted performance evaluations contains similar language regarding objectives. "The Enlisted Performance Evaluation Report cannot be the sole method of appraising members of performance. Counseling must be an ongoing process throughout the entire evaluation period."(10) The Civil Service Reform Act also requires that commanding officers specifically counsel SES employees regarding their performance.

Obviously, counseling is well established as an important and prevalent "principle" of leadership. Yet the distinction between types of counseling is not well recognized. The thesis of this paper is to discuss the distinction between *direct* and *indirect* counseling. By recognizing this distinction, leaders can choose the appropriate form and thereby increase the effectiveness of their counseling.

Traditional texts on naval leadership exhort leaders to "know their men." Current instructions and directives also instruct leaders that they

must tell subordinates—directly—what to do. While being told to examine feelings and conditioned to use *indirect* counseling techniques, leaders at the same time must counsel subordinates directly—especially regarding performance.

Indirect counseling originated in the classical Hawthorne studies. These well-known management studies, initially conceived to observe and evaluate the effects of changes on production in the physical environment, took on new direction and design when researchers discovered the relationship between attitude and counseling. Roethlisberger's report of his study clearly reveals the birth of "indirect counseling": He states that "A new era in personal relations began when . . . a new method of human control was perceived."(11)

Although the Hawthorne studies did much to develop both the technique of indirect counseling and its use to determine attitudes, they also marked the beginning of the trend that established indirect counseling as the predominant counseling form. Indirect counseling is deliberately structured to be "loose," and to deal with feelings and attitudes. The counselor is encouraged to listen and reflect rather than direct. The main purpose of indirect counseling is to encourage communications regarding feelings—not to clarify objectives. But, counseling designed to clarify feelings has limited use when counseling must direct tasks or clearly enunciate performance standards.

Attitudes and feelings are, of course, important components of management and performance, but so are direction and leadership. The "human

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relations" approach to problem solving is important, and indirect counseling is a particularly useful technique. But the initial concern in a counseling situation must be the *purpose of the session*; once the purpose is determined, the technique is chosen.

Leaders understand the need to combine careful listening and firm direction. Some leaders become so occupied with listening that they forget when and how to direct the helm. Naval leaders need not examine feelings endlessly, just as navigators must not take endless bearings; both must eventually direct a course. But sooner or later, you must evaluate your information and direct the helm on a specific course.

Direct counseling gives specific and explicit direction. For example, it may prescribe specific performance, and it is limited to specific issues. Also, it follows a pre-arranged structure, and it delivers formal directive communication. Thus, both the form and purpose of direct counseling differ from indirect counseling. Situations best suited to direct counseling are those in which counseling focuses on supervisor-subordinate sessions for setting objectives, performance standards, task accomplishments, or other similar goals that the leader clarifies and to which the subordinate *commits*.

To prepare for a direct counseling session, the leader must develop an outline for conducting the session (wandering about verbally in a direct counseling session is disastrous). A direct counseling outline would answer these questions:

- What is the established objective of the session?

- What specific actions are to be taken or avoided?
- What key points must be clearly understood?
- Does the subordinate clearly understand his or her firm commitment?
- Has a followup session been scheduled for a specific future time?

Thus, a direct counseling session is carefully "pre-arranged"; it clearly identifies a purpose and explicitly sets a course of action designed to achieve specific results. The leader must schedule, conduct, and control the session; the subordinate must make a commitment to the objectives of the session. Phrasing of questions and statements from the senior must hold to the outline and direct attention to performance or the task under discussion. For example, the senior might ask:

- What statements have I made that you don't understand?
- Do I need to clarify any of my statements?
- What are *you* accountable for?
- What do I expect from you?
- What will you now do?

The direct statements regarding purpose and expectations are helpful in setting the tone. Choosing an assertive point of view, rather than an aggressive approach, is important to success. Some superiors may need to assess their personal traits and characteristics, and either modify them to suit a direct counseling session or perhaps *change* them.

Leaders must understand the powerful differences between direct and indirect counseling, and recognize that the deliberate use of direct coun-

seling requires that the leader consciously develop a high degree of direct counseling skill. If direct counseling is to crystalize as a skill and to emerge as an effective method of counseling, leaders must overcome the tendency to use indirect counseling techniques, which result in "slipping" into a passive, reflective, feeling mode.

A great deal of emphasis has been placed on indirect counseling and the nearly tyrannical requirement that leaders must always listen, listen. Initially, leaders may find it difficult to control a direct counseling session and keep to the outline. But with experience, confidence, and practice, a leader can become comfortable and successful with direct counseling as a form and with a purpose that attains specific results.

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Vendovi: Cannibal and Curio

Prize Specimen Brought Back by the Great U.S. Exploring Expedition Was a Fiji Chieftain

On a balmy June day in 1842 a worn and battered sloop-of-war put into New York Harbor after a 4-year circumnavigation of the globe. USS *Vincennes*, the flagship of LT Charles Wilkes, tied up at the Navy Yard virtually without notice and her crew disembarked. The expedition's prize living specimen, Vendovi, Chief of Rewa, was carried ashore from his cot and checked into the Naval Hospital.

Editor's collection



Charles Wilkes, seen here during his Civil War service, led the expedition. In 1861, as skipper of USS *San Jacinto*, he provoked a crisis with Britain by seizing two Confederate commissioners from the mail steamer *Trent*.

His last known remark was one of wonder at the building's size. Two hours later he was dead. Surgeons poured wet plaster over the wasted but noble countenance and made a death mask. Once his head was severed and immersed in alcohol, it was turned over to the expedition. A burial detail unceremoniously interred the remains in the hospital cemetery.

Vendovi's fate was a gruesome and peculiar postscript to the first and certainly one of the greatest naval expeditions ever carried out by the U.S. Navy. Six ships had left Newport News in 1838 with a combined crew of over 600 officers, men, and 9 civilian scientists. When the two remaining original vessels returned 4 years later they carried aboard thousands of pounds of geologic and floral and faunal specimens—2,000 birds, 150 mammals, 1,000 corals, crustaceans and mollusks, 50,000 plants, and more than 5,000 anthropological specimens such as war clubs, Polynesian fish-hooks, bark cloth, and native sculpture, to name but a smattering. This massive trove would later form the nucleus of the Smithsonian Institution's natural history collection.

LT Wilkes and his men mapped the southern oceans and determined for the first time that Antarctica was a continent. They also ascended and set up a scientific station on the rim of the active Mauna Loa volcano.

The Doggett Massacre

But with it all, the Fiji Islands held a particular fascination. Although on the beaten path for seafarers and missionaries, the island group was largely unmapped and it was said its people possessed a relish for human flesh.

This was not mere heresay. In 1834 several crewmembers of the brig *Charles Doggett* out of Salem, MA, suffered an unhappy fate. The *Doggett's* captain had made a contract with Vendovi, Chief of Rewa, for his assistance in procuring a cargo of *bêche-de-mer* (sea cucumbers) for the China trade. As the sailors went ashore on Viti Levu Island to a hut where the product was being cured, suddenly and without warning, Vendovi's comrades slew the unwary men and set the building afire. The brig opened up on the attackers but the ineffective cannonade did little to diminish their appetites. They cooked one sailor and mutilated the rest. Paddy Connel, an Irishman living among the Fijians, bargained for the bodies and returned them to the ship, where the skipper had the remains sewn up in canvas bags and buried at sea in the traditional manner. Three days later

From *Magnificent Voyagers*



LT William Hudson, skipper of USS *Peacock*, arrested Vendovi after holding a retinue of Fijians hostage.



Alfred Agate sketched the Fiji chief Wilkes remembered as "a model of a man, very tall and erect and of a proud bearing, scrupulously clean in his habits."

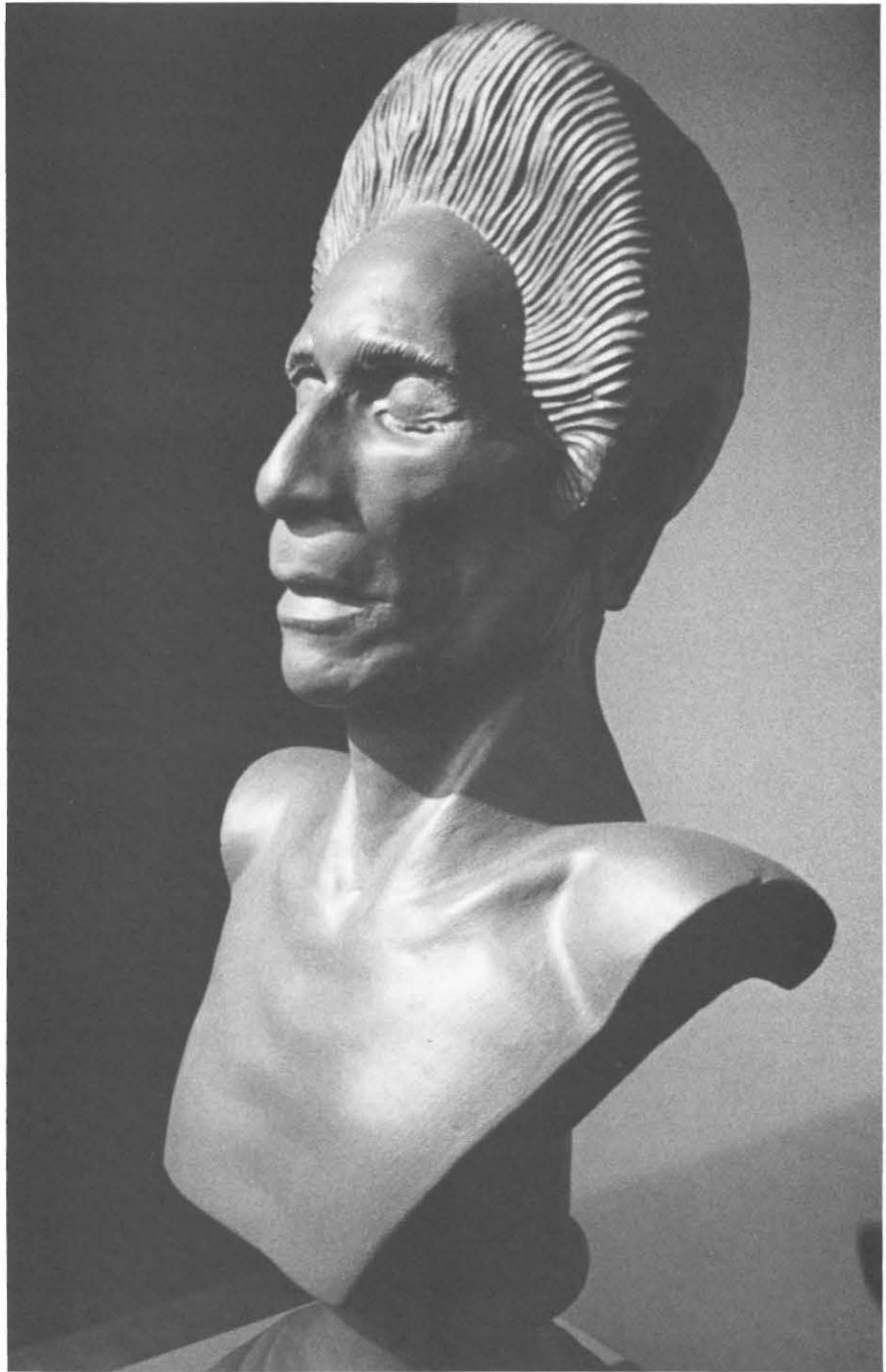
the inadequately weighted sacks washed ashore and the natives made a grisly meal of the contents.

As the Great Exploring Expedition entered Fijian waters some 6 years later and Wilkes learned of the fate of the *Doggett's* men, he vowed to bring Vendovi to justice. He left the details to LT William Hudson, skipper of *USS Peacock*.

Vendovi's Arrest

On 18 May 1840 LT Hudson went ashore accompanied by several crewmen and Alfred T. Agate, one of the expedition's artists. While wandering about, Agate met a priest who motioned that he wished the artist to sketch something in a nearby house. Agate followed and once inside, a man arose from his mat and indicated that he wanted his likeness drawn. "His head was dressed in the most elaborate and extravagant fashion of Rewa, and from the number of retainers, he appeared to be a high chief." (1) His face was smeared with oil and lamp-black, except for the lower part of his nose which was colored vermillion. From behind, his hairdo resembled an inverted iron pot. Agate and his comrades soon realized that this was the infamous cannibal wanted for murder.

Three days later LT Hudson set his trap. He invited the king and queen and a royal party aboard *Peacock* for American hospitality. Vendovi was



The death mask-bust on display

included on the guest list but, perhaps rightfully suspicious, he failed to attend.

Hudson prepared another stratagem. As drums beat to quarters, the marines took up positions and secured the canoes and gangways. The guests were then informed that they were all prisoners and would remain so until Vendovi either turned himself in or was delivered to the ship.

A deal was struck. Vendovi's half brother, a chief named Ngaraningiou, agreed to deliver his relative to the Americans, thereby insuring his own position and disposing of a hated rival. Ngaraningiou was soon underway in his outrigger canoe, which with its enormous sail spread to a strong breeze was speedily out of sight. (2)

In his absence the king and chiefs gossiped about the wanted man, casu-



Vendovi's grave marker, Section 6, Plot 122262, in the Cypress Hills National Cemetery, New York.

ally mentioning that Vendovi had not only ordered the murder of the *Charles Doggett* men but had killed his oldest brother as well.

The following morning the crew and hostages spotted Ngaraningiou's canoe as it emerged from the nearby river mouth. Within minutes the chief delivered his prisoner. Hudson interrogated Vendovi in the presence of the others and the native freely admitted taking part in the *Doggett* massacre. In fact, he had himself pinioned the mate's arms while the others crushed his skull with their war clubs. Had he eaten any of the sailors? No, not on this occasion, but the cannibal seemed puzzled over this line of questioning. Was it not customary for Fiji warriors to eat their enemies?

Vendovi was confined in irons and the hostages allowed to depart after being presented with gifts. The expedition planned to take him back to the United States, where he would be civilized, Christianized, and taught that

killing a white man was the worst thing a Fijian could do. Only then would he be sent home so he could cooperate in breaking his comrades of their savage appetites.

Not Quite a Crewmember

As *Peacock* departed Fiji waters, Vendovi shed bitter tears at what he sensed was a permanent parting with his native land. Once at sea he was released from irons and transferred to *Vincennes*. There he roamed the deck attempting to extract a tune from his ever present jews harp. Vendovi reconciled to having his huge head of hair cropped off, the locks of which the ship's barber retained for souvenirs.

In May 1841 *Vincennes* anchored at Port Discovery in Puget Sound and the crew traded with the local Indians. "It was amusing to us, who had no very exalted opinion of the Feejeans to observe the contempt our prisoner Vendovi entertained for these Indians, which was such that he could hardly deign to look at them."(3)

Nearly a year later, as the flagship made the westward passage from the East Indies to Cape Town, Master's Mate Benjamin Vanderford, Vendovi's only true friend, suddenly took ill and died. The old man had made several voyages to the Fiji Islands and, while not fluent in the dialects, was sufficiently acquainted with the language to converse with the prisoner. Now he was gone and so was Vendovi's last symbolic link with his homeland. Soon thereafter, the ship's surgeon noted that what had appeared to have begun as a mild cold grew worse by the day. "His own disease henceforward made rapid strides towards a fatal termination, and he showed that such was the case by his total disregard of everything that passed around him, as well as his moping, melancholy look."(4) Years later, Wilkes recalled the chief's final hours. "... he was unable to move about and was taken to his cot, and the day of our arrival at New York he passed away without a struggle, having succumbed [sic] to the Rapid consumption which his disease had now terminated in."(5)

The Brooklyn Naval Hospital log stated: "June 11, 1842 received from the *Vincennes*," Vendovi the Fiji chief this morning. Died about two hours after his admission. Was moribund when admitted. The diagnosis in the general register of patients was consumption."(6)

Death Mask

The Vendovi death mask-bust remained at the Brooklyn Naval Hospital until 1948 when that facility was disestablished. Shortly thereafter, LT W. Kenneth Patton, MSC, historian of the Bureau of Medicine and Surgery, brought it to BUMED headquarters in Washington where it rested atop a cabinet in the office of U.S. Navy Medicine. In 1983 the mask was formally transferred to the Smithsonian Institution, National Museum of Natural History. On 14 Nov 1985, 143 years after his death, Vendovi reappeared in public as part of *Magnificent Voyagers*. This exhibition of the 1838-1842 U.S. Exploring Expedition, will be on view at the National Museum of Natural History in Washington, DC, until 9 Nov 1986. —JKH

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Microsurgery: A Brief History

LCDR Edward R. Zech, MC, USN

The term "microsurgery" suggests a type of surgery that is new, experimental, and perhaps most applicable to neurologic or hand surgery. In fact, by 1901 when the general surgeons Carrel and Guthrie were standardizing vascular surgery, the potential value of small vessel anastomosis as a reparative and reconstructive tool was already well recognized.⁽¹⁾ Microsurgery is the next logical step in the refinement of surgical technique and is used today in every surgical specialty.

The operating microscope, introduced by Nylen in 1921, made this step initially possible.⁽²⁾ Holmgren, for whom Nylen worked, used it to treat human otosclerosis. In 1960 Jacobson suggested using high magnification to anastomose small blood vessels; he inaugurated the successful anastomosis of 3 mm vessels, reporting 100 percent patency in the carotid arteries of 20 dogs and 6 rabbits.⁽³⁾ Since that time progress in microsurgery has been rapid and closely tied to progress in precision manufacturing of surgical equipment, such as microsurgical suture, microinstruments, and microscopes with greater magnification and improved lighting. Despite these technological improvements, microanastomotic technique today differs little from the original description of large

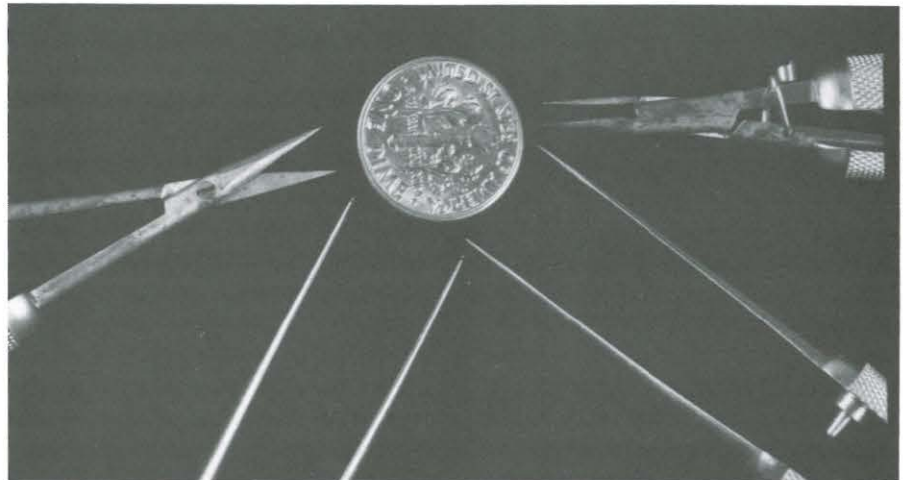


Photo by HM3 Bobby Brown

Basic microinstruments around a familiar object.

vessel anastomosis made by Carrel and Guthrie.⁽⁴⁾

Surgical technique is critical in large vessel surgery, but microvascular surgical technique is even more demanding. Minute complex techniques require extraordinary concentration and dexterity. Microsurgical students never forget their clumsy first attempts at handling fragile tissues with tiny tipped instruments or at retrieving a needle on suture much finer than hair. With practice, eye-hand coordination improves, but the anastomosis must be perfect in every detail from the stripping of adventitia and the flushing of the vessel with heparin to the accurate spacing of every suture. Large arteries are more forgiving; systolic pressure to

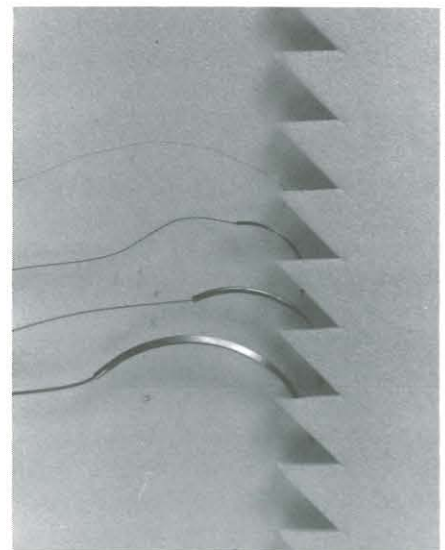


Photo by HM3 Bobby Brown

From bottom to top, 2-0, 5-0, 7-0, and 10-0 nylon suture on cutting needles.

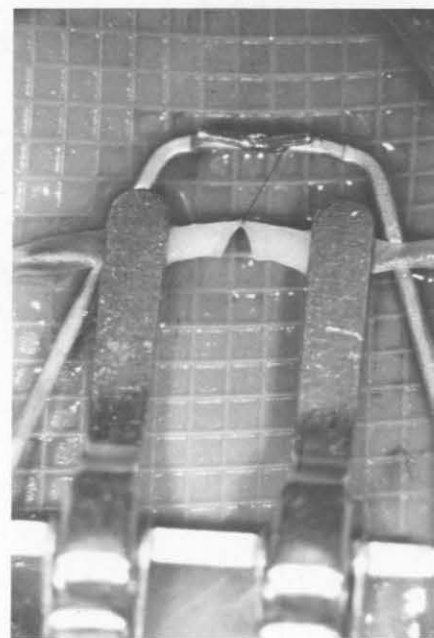
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Femoral artery prepared for operation. This artery is about the same size as an adult human digital artery. The background grid consists of 1 mm squares. For comparison, the monument columns on the reverse of a Lincoln penny are 1 mm apart.



Artery divided, placed in double clamp, looking down one lumen.



First stitch of an interrupted anastomosis. Suture is 10-0 nylon.

a great extent keeps a large diameter anastomosis open. An insignificant thrombus in macrosurgery is a microsurgical catastrophe.

An ideal anastomosis in small vessels is a flexible, dynamic repair that perfectly apposes intima to intima. Such an anastomosis requires unique instrumentation. In 1966 Buncke and Schulz reported their work in the microminiaturization of suture that would expand and contract with pulsatile changes in the vascular tree. They eliminate the 6:1 discrepancy between needle size and suture size with the introduction of metallized nylon, the end of fine nylon suture was stiffened with a metal coating so that the suture itself would penetrate tissue.(5) Imagine the increased applications and suturing capacities to be gained by reducing the size of the needle hole from more than 5 percent of the vessel circumference to less than 1 percent (at that time a proper anasto-

mosis had 12-15 sutures)! Over the next 18 years suture material has been reduced to 20 micra and needles to 100 micra. Special cutting needles have been created that both further reduce needle hole size and improve the tensile strength of microanastomoses.(6) Early microsurgeons made their own instruments; the profusion of instruments now available commercially is nearly impossible to enumerate. One significant advance is the innovation of cold lighting, which in turn allows the use of still greater magnification, including fiber optic and, most recently, liquid conducted light.

Applications for microsurgery have risen in every surgical specialty. Of particular interest to military surgeons is the use of vascularized free grafts to cover the large soft tissue defects so commonly resulting from combat. There are many recent reports of newly devised free flap donor sites and composite grafting procedures. One

such example is a medial brachial neurovascular free flap to close a foot amputation stump.(7) Commonly performed procedures include digit and limb replantation; digit transfer, such as replacing a lost thumb with a toe, restoring use to an injured hand; extracranial to intracranial cerebral revascularization; neurorrhaphy; more precise ureteral and urethral repair; and sterilization reversal. In the future a segment of small bowel will be interposed for esophageal replacement, where the proximal neoesophagus is vascularized by anastomosis to a thyrocervical branch vessel thus eliminating the proximal ischemia that is this operation's well-documented downfall.(8) Biliary and pancreatic surgical results will improve. Vascularized rib may be used to reconstruct resected or atrophic mandible. Avascular bone necrosis, particularly in the acute stages and probably including Legg-Perthes disease, Kienbock's disease,



Final stitch. The needle is in the wall of both vessel ends.



Completed anastomosis.



Patent anastomosis with forcep showing pulsatile flow (flicker test).

and even impending necrosis of the femoral head will likely be treated by revascularization. The future may include more frequent joint transfers or even limb bud transplantation as a treatment for congenital amputation.⁽⁷⁾

Many microsurgeons believe that several procedures now commonly performed without magnification will be improved by its application. Many surgical specialty boards have ratified this position by mandating microsurgical training in residency programs. With the dramatic increase in the numbers of trained surgeons, the day is not far off when performance of certain microprocedures will be the standard of care. Whatever else can be said about microsurgical training, a surgeon's macroscopic technique is probably forever altered, positively, by the seemingly incredible precision with which he has seen himself work under the operating microscope.

Surgeons seeking experience in microsurgery no longer have to train themselves as once was necessary. Select civilian and military hospitals run microsurgery labs for training their own personnel. Naval Hospital, Oakland has sponsored a 2-week course for the past 5 years. It is the only course within DOD that accepts students from outside the local command. Priority is given to active duty Navy surgeons, then active duty surgeons from other services, and then Reserve surgeons. The course is approved for 80 hours of Category 1 Continuing Medical Education credit and includes extensive hands-on training in a variety of basic microsurgical techniques in 450 gram rats. Presently more than 130 surgeons have been graduated from this course at Oak Knoll. For information contact LCDR C. Alexander, MC, USNR, Department of Orthopedics, Naval Hospital, Oakland, CA 94627-5000.

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Pseudofolliculitis Barbae

CAPT Padman A. Menon, MC, USN

With the CNO's message on "Pride and Professionalism" of December 1984, renewed interest has developed in pseudofolliculitis barbae. A clean-shaven face is required of all Navy personnel except in medically necessary conditions. Pseudofolliculitis barbae is one condition where a no-shaving status may be required for variable periods to control the problem. The medical department of each Navy installation should be fully cognizant of the situation where a beard may or may not be acceptable.

Pseudofolliculitis barbae is an inflammatory condition of the skin with a definite cause. It is highly prevalent in the black race. The exact incidence is unknown. Roughly 50 percent of black men may be predisposed. Rarely, members of other races with curly whiskers may also develop pseudofolliculitis.

Pseudofolliculitis barbae, abbreviated as PFB, is also known as "pili incarnati," "ingrown hair," or "shaving bumps." There is no definitive cure for this tendency but symptoms can be completely alleviated by letting the beard grow.

Symptoms may initially surface in boot camp, when a recruit, having had a beard in the past, is required to shave. The clinical features begin only when the patient starts to shave daily. The presentation is characterized by papules, pustules, scars, (with or without keloids), and hyperpigmentation of the beard region. A detailed clinicopathologic mechanism of causation and management is well described by CAPT Wilmont S. Draper, MC, in *U.S. Navy Medicine*, Vol. 72, Sep-

tember 1981.

The pathogenesis of PFB is a foreign body-type of reaction, due to the re-entry penetration of the newly shaved hair; as the tip of the hair grows out, it re-enters the skin and forms a loop. At the site of re-entry, an inflammatory reaction is elicited. The re-entering hair is short, usually penetrating about 2 mm in depth. It is important to understand that it is the hair itself and not bacteria that induces the inflammation, hence the term "PFB," to distinguish from true bacterial folliculitis. The inflammation is brought on by neutrophils and resident microbial flora. Pathogenic bacteria such as staphylococcus or streptococcus do not take part in the causation of PFB. Bacterial cultures are consistently negative.

As the hair continues to grow, the submerged tip of hair eventually dislodges itself by its springing action and elasticity. The inflammatory papule will then begin to heal. A small scar may remain or rarely a keloid may form. As daily shaving continues, the same process is repeated. When the papules are repeatedly traumatized by the razor, discomfort and bleeding result. Healing, irritation, and scarring can be observed at the same time at different sites of the beard in an affected person. Healing can take place with post-inflammatory hyperpigmentation in darker races.

By allowing the beard to grow out, the sequence of events stated previously can be diminished. But growing a beard in the military may be unacceptable. As the CNO message states, a clean-shaven face also "provides increased personal safety for those who must, on short notice, be prepared to wear OBA's, gas masks, oxy-

gen masks, and in general, work in stressing environments which are becoming more hazardous as technology, weapon sophistication, and high tempo operations continue to complicate our everyday lives in the workplace."

Because the majority of the people involved are of a particular race, considerable social and economic problems can occur. To avoid potential embarrassment and misery, it should be recognized that PFB can occur as a real problem to those individuals so affected.

In order to comply with the current Navy grooming standards, concerned medical personnel, regardless of their position as physicians, nurses, physician assistants, or independent duty corpsmen, should take necessary steps to educate both the patients and their supervisors regarding the nature of PFB.

Management

- There is no absolute treatment for PFB. By letting the patient grow a beard, the inflammatory reaction can be abated.
- A modified shaving regimen and teaching of proper shaving techniques may be helpful in mild cases.
- In a motivated individual, correct shaving techniques may help to reduce the attendant discomfort.
- Supervisory/inspecting personnel should have a clear understanding of this problem. A barely discernible stubble, by avoiding close shaving or by shaving once in 2-3 days, may be more acceptable than a full beard.
- A modified shaving regimen should include at least a 3-month trial. Such a process may be put into effect in the following chronological order:

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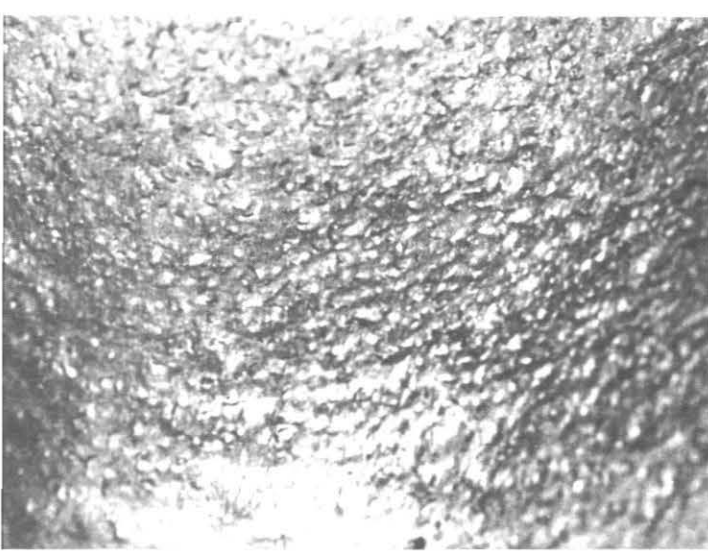


Figure 1. Shows numerous papules, pustules, and keloidal papules of the beard region.

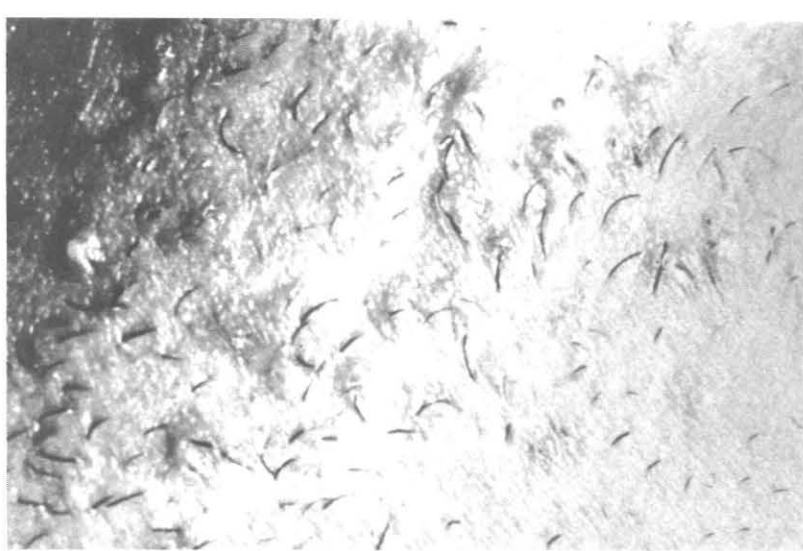


Figure 3. Inflammatory nodules surrounding the chin.

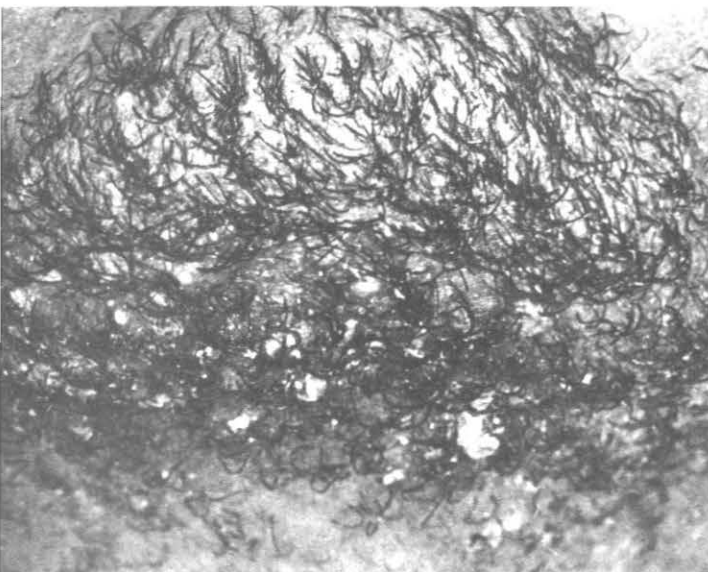


Figure 2. Close up of chin with keloidal lesions.

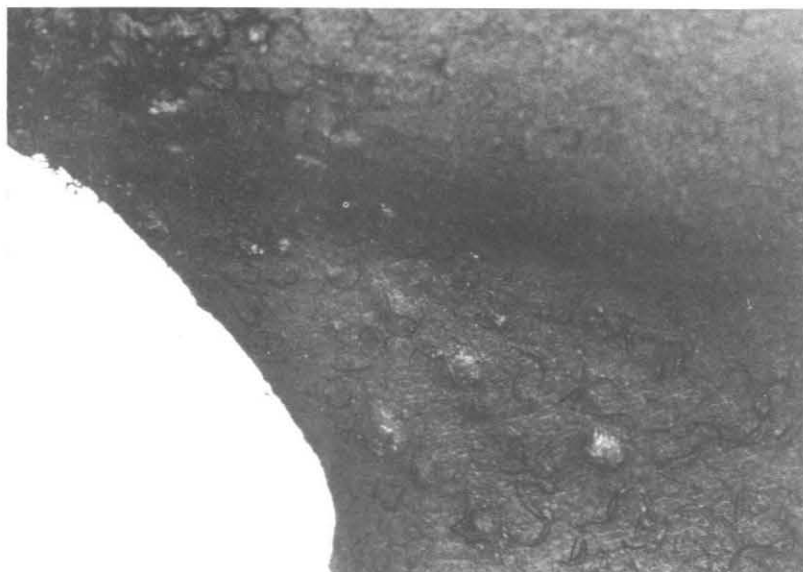


Figure 4. Keloids and inflammatory lesions of the lateral neck.

Training Period for Shaving:

1. No shaving for 30 days
2. During this period, prepare the beard as follows to dislodge ingrown hairs:
 - a. Use toothpick or straightpin twice a day.
 - b. Vigorous toweling twice a day.
 - c. Brush beard with toothbrush or a Buf-Puf twice a day.
 - d. Wash with soap and water twice a day.

After the beard is "trained" as above, do the following:

1. Repeat steps a and b above before shaving.
2. Shave, using the low setting on a single blade adjustable razor or cut

away beard with an electric clipper with a 000 head. Do not stretch the skin—shave along the grain as a single stroke.

3. Apply 1 percent hydrocortisone cream twice daily.
4. Wash with Fostex or Desquamex soap twice daily.
5. Apply Retin-A cream 0.05 percent at night.
6. Continue to shave every 2-3 days, depending on severity.
7. Return for medical evaluation every week or every other week.

Continue following all steps 1 through 7 above, for 30-60 days. In moderate-to-severe cases, try any one of the following:

1. Barium sulfide powder (Magic Shave)
 - a. Follow package directions on mixing, application, rinsing, and washing.
 - b. If irritation occurs, apply 1 percent hydrocortisone cream and consult a physician.
2. Calcium thioglycolate (Neet, Nair, Nudit)
 - a. Follow package directions.

If all attempts fail, members may be given a permanent no-shave chit after a 2-month trial period.

Another alternative is beard removal by electrolysis. This is an expensive procedure and all costs must be borne by the servicemember. □

Immunization Against Communicable Diseases

Classification of Vaccines, Summary of Immunization Requirements, Procedures, and Special Considerations

CAPT Alfred D. Heggie, MC, USNR

Communicable diseases are often critical factors in determining the success or failure of military operations. Therefore, their prevention is an important function of the Navy Medical Department. Methods of prevention include rigorous attention to personal hygiene, sanitation measures, and vector control, administration of prophylactic medications, and induction of immunity by use of vaccines. The vaccines in current use for immunization of Navy and Marine Corps personnel against communicable diseases are discussed in the following three-part series.

Immunizations are important aspects of medical care in both military and civilian populations. However, because military personnel must be continuously prepared to function under adverse conditions in any part of the world, they require immunizations against a greater number of communicable diseases than do civilians.

Immunization with some vaccines

produces lifelong immunity. The immunity produced by other vaccines is temporary and periodic booster doses are required to maintain protection. Vaccines are classified as "biologicals" by the Food and Drug Administration (FDA), because in contrast to medications that contain chemicals in relatively pure form, vaccines are complex preparations that may contain live or inactivated (killed) microorganisms, parts or products of microorganisms (such as bacterial toxoids), and a variety of substances that are derived from the biological culture systems used for vaccine manufacture.

As is the case with other biologicals such as blood products, vaccines have limited shelf lives and require careful storage under proper conditions. The use of outdated or improperly stored vaccines may result in failure to induce desired protective immunity and can give a false sense of security that personnel are protected.

Vaccines may sometimes also cause undesirable reactions. These reactions may be caused either by the microorganisms or microbial products necessary for immunization, or by substances that are unavoidably left over from the vaccine manufacturing process. These substances include preservatives, stabilizers, antibiotics (usually neomycin), and foreign pro-

teins. These components may cause allergic reactions that range all the way from mild urticaria to anaphylactic shock.

Live attenuated viruses contained in some vaccines may produce serious infections in persons with diseases that depress the immune system. Therefore, it is important for personnel responsible for immunization programs to be knowledgeable about the properties and storage requirements of vaccines and the appropriate indications for their use.

Decisions regarding the use of a vaccine should be based on considerations of the efficacy of the vaccine in protection against disease, the prevalence and severity of the disease against which protection is desired, the risk of adverse reactions associated with the immunization procedure, and the financial resources that may have to be diverted from other important health activities in order to support the immunization program being proposed.

For example, application of these considerations clearly supports the use of polio and influenza vaccines that are effective immunizing agents against two potentially prevalent and serious diseases. Conversely, the same considerations resulted in elimination of the requirement for cholera immu-

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nization because, although cholera is an important and serious disease, the vaccine frequently causes febrile reactions, is only marginally effective, and the chance of occurrence of cholera in our forces is small. Similar considerations should be applied to periodic re-evaluations of existing immunization programs and to formulations of decisions on the use of newly developed vaccines.

The classification and immunizing components of vaccines currently used for immunization of Navy and Marine Corps personnel are described in Table 1. BUMEDINST 6230.1H, dated 7 June 1977, and NAVMED-COMNOTES 6230, dated 13 Jan 1984 and 28 Aug 1984 contain the immunization requirements and procedures to be followed by the Medical Department. These requirements and procedures are summarized in Table 2. Parts II and III of this article discuss individual virus and bacterial vaccines, respectively, in greater detail.

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TABLE 1
Classification of Vaccines

<i>Vaccine</i>	<i>Type</i>
Adenovirus 4/7	Live attenuated virus vaccine, containing adenoviruses types 4 and 7.
Cholera	Inactivated bacterial vaccine (used only for foreign travel to countries that require cholera immunization for entry)
Diphtheria	Diphtheria toxoid (inactivated toxin of diphtheria bacilli). Usually combined with tetanus vaccine.
Hepatitis B	Inactivated surface antigen of hepatitis B virus
Influenza	Inactivated virus vaccine
Measles	Live attenuated virus vaccine. Usually combined with rubella vaccine.
Measles-Rubella (MR)	Combination of measles and rubella vaccines
Measles-Mumps-Rubella (MMR)	Combination of measles, mumps, and rubella vaccines
Meningococcal, Tetravalent	Polysaccharide antigens of groups A, C, Y, and W135 meningococci
Mumps	Live attenuated virus vaccine
Plague	Inactivated bacterial vaccine
Polio, Trivalent Oral (TOPV)	Live attenuated virus vaccine containing polioviruses types 1, 2, and 3
Rabies, Human Diploid Cell (HDCV)	Inactivated virus vaccine
Rubella	Live attenuated virus vaccine. Usually combined with measles vaccine.
Smallpox	Live vaccinia virus. Produces protective cross-immunity against smallpox virus.
Tetanus	Tetanus toxoid (inactivated toxin of tetanus bacilli). Usually combined with diphtheria vaccine.
Tetanus-Diphtheria (Td)	Combination of tetanus and diphtheria vaccines
Typhoid	Inactivated bacterial vaccine
Yellow Fever	Live attenuated virus vaccine

TABLE 2
Immunization Requirements and Procedures for Navy and Marine Corps Personnel

<i>Vaccine</i>	<i>Personnel Requiring Immunization</i>	<i>Immunization Procedure</i>
Adenovirus 4/7	All male recruits.	One dose (1 tablet) of type 4 and one dose of type 7 vaccine PO within first 3 days of recruit training or processing.
Cholera	Requirement has been eliminated. May occasionally be required for foreign travel to comply with entry requirements of host country.	One 0.5 ml dose SC or IM will usually meet administrative requirement, but check with area EPMU for entry regulations of host country.
Hepatitis B	Not currently required, but is highly recommended for persons at risk of exposure to hepatitis B virus, such as persons whose activities involve frequent contact with human blood or blood products.	Three 1.0 ml doses IM into deltoid area. First two doses 1 month apart. Third dose 5 months after the second.
Influenza	All incoming recruits and annually to all active duty personnel.	One 0.5 ml dose SC or IM annually. Because vaccine is revised each year, check manufacturer's instructions for possible change in dose.
Measles-Rubella (MR)	All male recruits. Female recruits should be tested for pregnancy and rubella immunity to determine if immunization is indicated.	One dose (amount specified by manufacturer) to be given SC within the first 3 days of recruit training or processing.
Meningococcal, Tetravalent	Required only for Navy and Marine Corps recruits	One 0.5 ml dose SC during first 3 days of training. Supplied as 50-dose vials for jet injection only.
Mumps	All susceptible personnel engaged in health care.	One dose (amount specified by manufacturer) to be given SC. No boosters required.
Plague	All Marine Corps personnel and Navy personnel assigned to operational billets with Fleet Marine Force or as individually indicated in high risk occupational settings. Requirement is eliminated for other Navy personnel.	Two IM doses: first dose 1.0 ml. Second dose 0.2 ml 3 months after first dose. Give by syringe and needle. Use of jet injector is prohibited for plague vaccine.
Polio, Trivalent Oral (TOPV)	All recruits during first 3 days of training. Officer personnel and officer candidates during indoctrination or processing and ROTC during ACDUTRA, unless documented that TOPV was already received.	One dose PO (amount specified by manufacturer). Previous requirement for second and third doses has been eliminated.
Rabies, Human Diploid Cell (HDCV)	Pre-exposure immunization required for personnel in frequent contact with potentially rabid animals or with laboratory specimens that may contain rabies virus. For post-exposure prophylaxis, follow ACIP recommendations.	Pre-exposure immunization: Three 1.0 ml doses IM. Give second dose 7 days after first dose. Give third dose 28 days after first dose. Post-exposure prophylaxis: Follow ACIP recommendations.
Smallpox	Newly inducted personnel, who will remain within the confines of Navy or Marine Corps facilities where contact with nonvaccinated persons can be minimized.	Intradermal administration by multiple puncture technique.
Tetanus-Diphtheria (Td)	All recruits and student officers, unless documented that immunization was received prior to active duty.	Two 0.5 ml doses SC or IM. First dose to recruits during second week of training. Give second dose 4 or more weeks after the first dose. Booster doses (0.5 ml) every 10 years, or when medically indicated for wound management.
Typhoid	All active duty personnel at first duty station. Do not give to recruits, student officers, or to reservists on inactive duty.	One 0.5 ml dose SC or IM. Requirement for second dose as part of basic series is eliminated. Only certain personnel require boosters. (See BUMEDINST 6230.1H)
Yellow Fever	All active duty personnel. Recruits no later than 7th week of training. Reservists during ACDUTRA.	One 0.5 ml dose SC. Booster dose (0.5 ml SC) every 10 years.

ACIP = Immunization Practices Advisory Committee (Centers for Disease Control)
EPMU = Environmental and Preventive Medicine Unit
IM = intramuscularly
PO = by mouth (per os)
SC = subcutaneously

Shea-Arentzen Nursing Symposium

The Navy nurses of Naval Hospital, San Diego will sponsor the 7th Shea-Arentzen Nursing Symposium 14-16 May 1986 at the Naval Training Center, San Diego, CA.

The symposium, entitled *Nursing: Commitment to Excellence*, is designed to provide an educational opportunity to maintain advanced levels of professional competence and to promote high standards in nursing practice. It provides an opportunity for nurses from all three military Nurse Corps and from the civil service community to share knowledge, ideas, skills, and fellowship. CAPT Mary Hall, NC, commanding officer of Naval Hospital, Long Beach, CA, will be the keynote speaker.

During the 3-day workshop, five simultaneous sessions will be offered to participants both in the morning and afternoon of each day. There will be 62 offerings and 82 speakers. The symposium has been approved by the California Board of Registered Nursing for a maximum of 20 contact hours.

For additional information contact: Dr. Joe Johnson, Naval Hospital, San Diego, CA 92134. Telephone: Auto-von 987-2646, Commercial (619) 233-2646.

Critical Care Nurses

A Special Interest Group (SIG) of the American Association of Critical Care Nurses is currently in the development stages. A SIG forum for military nurses will be held 22 May 1986 at the AACN National Teaching Institute in Anaheim, CA.

For additional information contact: LT Marilyn B. States, NC, USN, Suite 1058, 600 Federal Place, Louisville, KY 40202. Telephone: FTS 352-5176, Commercial (502) 582-5176.

Nurse Corps Extravaganza

There will be a Nurse Corps officer reunion for active, retired, Reserve, and former Navy nurses at Bremerton, WA, from 29 May to 1 June 1986. Meet old friends, make new ones, and earn Continuing Education Units by coming early.

For more information write: CAPT Mary Kerdus, NC, USN, Naval Hospital, Boone Road, Bremerton, WA 98312-1898.

Optometry Meeting

A tri-service optometry meeting will be held 17-20 June 1986 at Naval Hospital, San Diego. Participants may earn 18 Continuing Education Units.

For more details contact: Dr. Carl Thome Optometry Clinic, Box 63, Naval Hospital, San Diego, CA 92134.

Telephone: Auto-von 987-2941, Commercial (619) 233-2941.

Scientific Experiments

Massachusetts Institute of Technology will offer an elementary course in *Design and Analysis of Scientific Experiments* 14-19 July 1986.

Applications will be made to the physical, chemical, biological, medical, engineering, and industrial sciences, and to experimentation in psychology and economics. Further information may be obtained by writing to: Director of Summer Session, Room E19-356, Massachusetts Institute of Technology, Cambridge, MA 02139.

World Congress of Cardiology

The World Congress of Cardiology, sponsored by the International Society and Federation of Cardiology, will be held 14-19 Sept 1986 at the Convention Center, Washington, DC. The Congress will be dedicated to Dr. Paul Dudley White, who served as President Eisenhower's personal physician during his episode with heart disease. The American Heart Association will host and organize this scientific meeting expected to attract 12,000 cardiologists, researchers, teachers, and nurses from more than 70 countries.

The program is aimed at enriching scientific knowledge in cardiological medicine among scientists the world over, as well as providing an opportunity to share ideas in promising areas of investigation.

Papers from prominent scientists and cardiologists from all over the world will be presented at the scientific sessions. The program will consist of lectures, symposia, round table discussions, poster sessions, and forums providing opportunities for open discussion and free exchange of information. Scientific films and educational literature will also be exhibited. In addition, a special program will be organized for nurses specializing in cardiology. The official languages of the Congress are English, Spanish, and French.

Registrants will also have the opportunity of participating in scientific tours to the National Heart, Lung, and Blood Institute, the American College of Cardiology Heart House in Bethesda, and various medical schools and cardiovascular centers in the Washington area. The social program will include tours to Washington's historical and cultural centers.

Abstract forms and copies of the preliminary program are now available. Inquiries should be directed to: Dr. Donald C. Harrison, Secretary General, World Congress of Cardiology, 7320 Greenville Avenue, Dallas, TX 75231. Telephone: (214) 750-5429, Cable: Tencard, Dallas, Texas.

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